

**6BF11**

# Compactron Dissimilar Double Pentode

• AUDIO POWER PENTODE • QUADRATURE FM DETECTOR • LOW HUM • 140 VOLTS B+

The 6BF11 is a compactron containing a sharp-cutoff, dual-control pentode (Section 2) and a power pentode (Section 1). The dual-control pentode is intended for use as an FM detector and the power pentode as an audio-frequency output amplifier in television receivers. The power output pentode features relatively high dynamic plate resistance which results in minimizing hum currents in the plate circuit due to power supply ripple.

## GENERAL

### ELECTRICAL

Cathode - Coated Unipotential

Heater Characteristics and Ratings

Heater Voltage, AC or DC\* . . . 6.3±0.6 Volts  
Heater Current†. . . . . 1.2 Amperes  
Direct Interelectrode Capacitances‡

#### Section 1

Grid-Number 1 to Plate: (1g1 to 1p) . 0.24 pf  
Input: 1g1 to (h + 1k + 1g2 + b.p. +  
i.s.) . . . . . 13 pf  
Output: 1p to (h + 1k + 1g2 + b.p. +  
i.s.) . . . . . 10 pf

#### Section 2

Grid-Number 1 to Plate: (2g1 to 2p) . 0.036 pf  
Grid-Number 3 to Plate: (2g3 to 2p) . 3.2 pf  
Grid-Number 1 to All Except Plate:  
2g1 to (h + 2k + 2g2 + 2g3 + i.s.) 6.5 pf

### Section 2 (Cont'd)

Grid-Number 3 to All: 2g3 to (h + 2k +  
2g1 + 2g2 + 2p + i.s.) . . . . 8.0 pf  
Grid-Number 1 to Grid-Number 3:  
(2g1 to 2g3). . . . . 0.11 pf

### Coupling

Plate (Section 2) to Plate (Section 2):  
(1p to 2p) . . . . . 0.13 pf

### MECHANICAL

Operating Position - Any

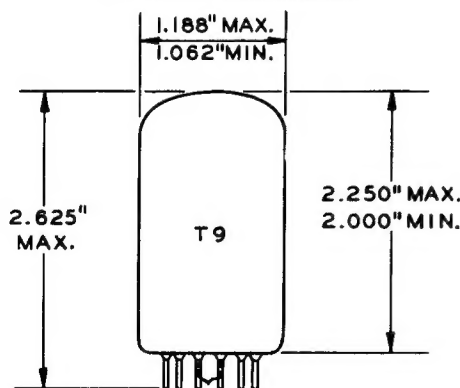
Envelope - T-9, Glass

Base - E12-70, Button 12-Pin

Outline Drawing - EIA 9-59

Maximum Diameter . . . . . 1.188 Inches  
Minimum Diameter . . . . . 1.062 Inches  
Maximum Over-all Length . . . . 2.625 Inches  
Maximum Seated Height. . . . . 2.250 Inches  
Minimum Seated Height. . . . . 2.000 Inches

### PHYSICAL DIMENSIONS

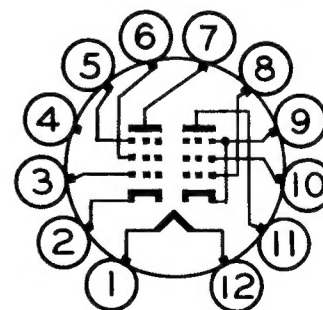


EIA 9-59

### TERMINAL CONNECTIONS

Pin 1 - Heater  
Pin 2 - Cathode (Section 2) and  
Internal Shield  
Pin 3 - Grid Number 1 (Section 2)  
Pin 4 - No Connection  
Pin 5 - Grid Number 3 (Suppressor)  
(Section 2)  
Pin 6 - Grid Number 2 (Screen)  
(Section 2)  
Pin 7 - Plate (Section 2)  
Pin 8 - Grid Number 1 (Section 1)  
Pin 9 - Cathode and Beam Plates  
(Section 1)  
Pin 10 - Grid Number 2 (Screen)  
(Section 1)  
Pin 11 - Plate (Section 1)  
Pin 12 - Heater

### BASING DIAGRAM



EIA 12EZ

The tubes and arrangements disclosed herein may be covered by patents of General Electric Company or others. Neither the disclosure of any information herein nor the sale of tubes by General Electric Company conveys any license under patent claims covering combinations of tubes with other devices or elements. In the absence of an

express written agreement to the contrary, General Electric Company assumes no liability for patent infringement arising out of any use of the tubes with other devices or elements by any purchaser of tubes or others.

**GENERAL ELECTRIC**

Supersedes 6BF11 D and R Sheet dated 12-63

**MAXIMUM RATINGS****DESIGN-MAXIMUM VALUES****SECTION 1**

Plate Voltage . . . . .	165	Volts
Screen Voltage . . . . .	150	Volts
Plate Dissipation . . . . .	6.5	Watts
Screen Dissipation . . . . .	1.8	Watts
DC Cathode Current . . . . .	65	Milliamperes
Heater-Cathode Voltage		
Heater Positive with Respect to Cathode		
DC Component . . . . .	100	Volts
Total DC and Peak . . . . .	200	Volts
Heater Negative with Respect to Cathode		
Total DC and Peak . . . . .	200	Volts
Grid Circuit Resistance		
With Fixed Bias . . . . .	0.25	Megohms
With Cathode Bias . . . . .	0.5	Megohms

**SECTION 2**

Plate Voltage . . . . .	330	Volts
Suppressor Voltage . . . . .	28	Volts
Screen Supply Voltage . . . . .	330	Volts
Screen Voltage - See Screen Rating Chart		
Positive DC Grid-Number 1 Voltage . . . . .	0	Volts
Plate Dissipation . . . . .	1.7	Watts
Screen Dissipation . . . . .	1.1	Watts
Heater-Cathode Voltage		
Heater Positive with Respect to Cathode		
DC Component . . . . .	100	Volts
Total DC and Peak . . . . .	200	Volts
Heater Negative with Respect to Cathode		
Total DC and Peak . . . . .	200	Volts

Design-Maximum ratings are limiting values of operating and environmental conditions applicable to a bogey electron tube of a specified type as defined by its published data and should not be exceeded under the worst probable conditions.

The tube manufacturer chooses these values to provide acceptable serviceability of the tube, making allowance for the effects of changes in operating conditions due to variations in the characteristics of the tube under consideration.

The equipment manufacturer should design so that initially and throughout life no design-maximum value for the intended service is exceeded with a bogey tube under the worst probable operating conditions with respect to supply-voltage variation, equipment component variation, equipment control adjustment, load variation, signal variation, environmental conditions, and variations in the characteristics of all other electron devices in the equipment.

**CHARACTERISTICS AND TYPICAL OPERATION****CLASS A<sub>1</sub> AMPLIFIER****SECTION 1**

Plate Voltage . . . . .	145	Volts
Screen Voltage . . . . .	110	Volts
Grid-Number 1 Voltage . . . . .	-6.0	Volts
Peak AF Grid-Number 1 Voltage . . . . .	6.0	Volts
Plate Resistance, approximate . . . . .	30000	Ohms
Transconductance . . . . .	8600	Micromhos
Zero-Signal Plate Current . . . . .	36	Milliamperes
Maximum-Signal Plate Current . . . . .	40	Milliamperes
Zero-Signal Screen Current . . . . .	3.0	Milliamperes
Maximum-Signal Screen Current . . . . .	9.0	Milliamperes
Load Resistance . . . . .	3000	Ohms
Total Harmonic Distortion, approximate . . . . .	10	Percent
Maximum-Signal Power Output . . . . .	2.4	Watts

## CHARACTERISTICS AND TYPICAL OPERATION (Cont'd)

## AVERAGE CHARACTERISTICS

## SECTION 2

Plate Voltage . . . . .	150	Volts
Suppressor Voltage . . . . .	0	Volts
Screen Voltage . . . . .	100	Volts
Cathode-Bias Resistor . . . . .	560	Ohms
Plate Resistance, approximate . . . . .	0.15	Megohms
Grid-Number 1 Transconductance . . . . .	1000	Micromhos
Grid-Number 3 Transconductance . . . . .	400	Micromhos
Plate Current . . . . .	1.3	Milliamperes
Screen Current . . . . .	2.0	Milliamperes
Grid-Number 1 Voltage, approximate Ib = 10 Microamperes . . . . .	-4.5	Volts
Grid-Number 3 Voltage, approximate Ib = 10 Microamperes . . . . .	-4.5	Volts

## NOTES

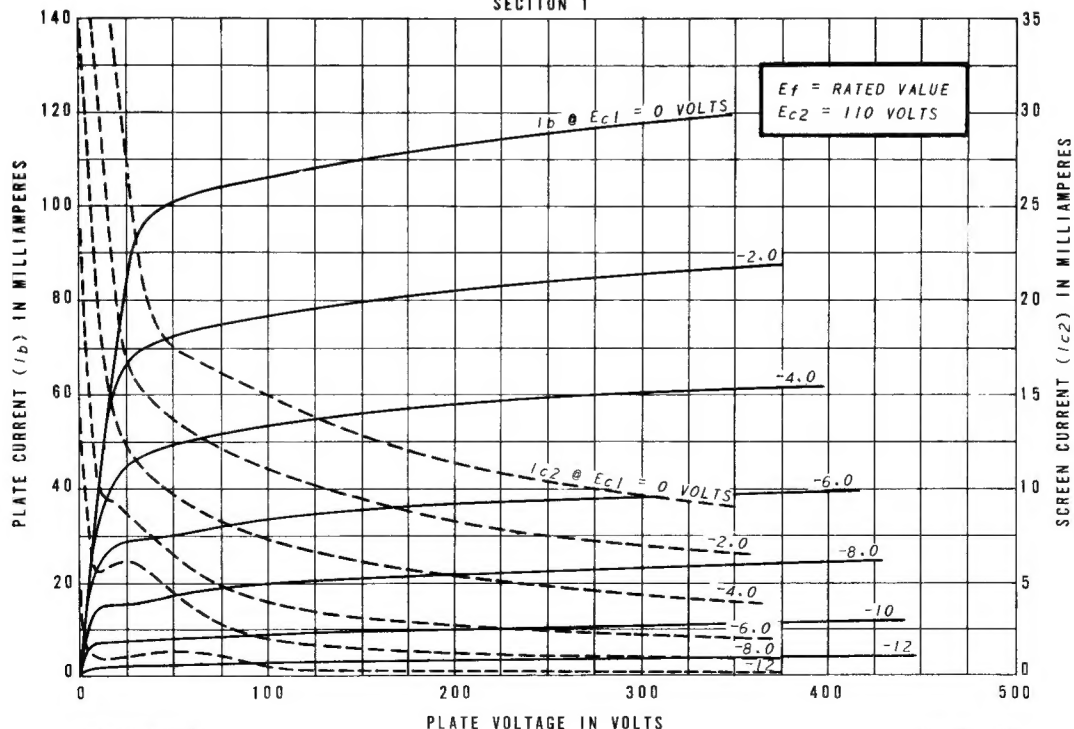
\* The equipment designer should design the equipment so that heater voltage is centered at the specified bogey value, with heater supply variations restricted to maintain heater voltage within the specified tolerance.

‡ Heater current of a bogey tube at  $E_f = 6.3$  volts.

§ Without external shield.

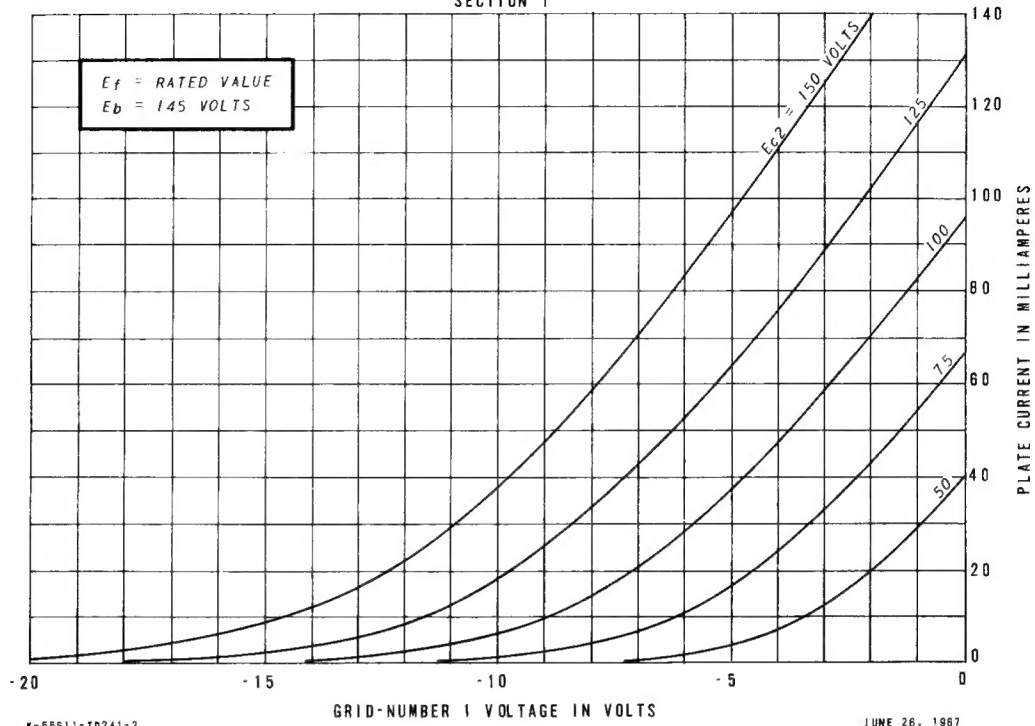
## AVERAGE PLATE CHARACTERISTICS

## SECTION 1



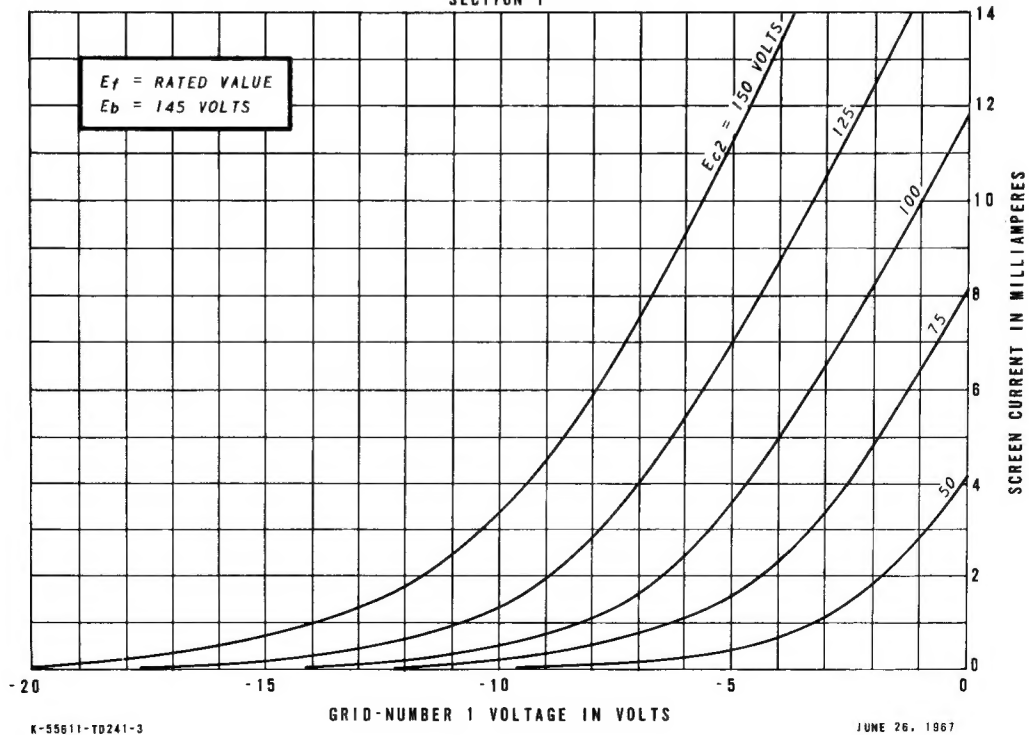
## AVERAGE TRANSFER CHARACTERISTICS

SECTION 1



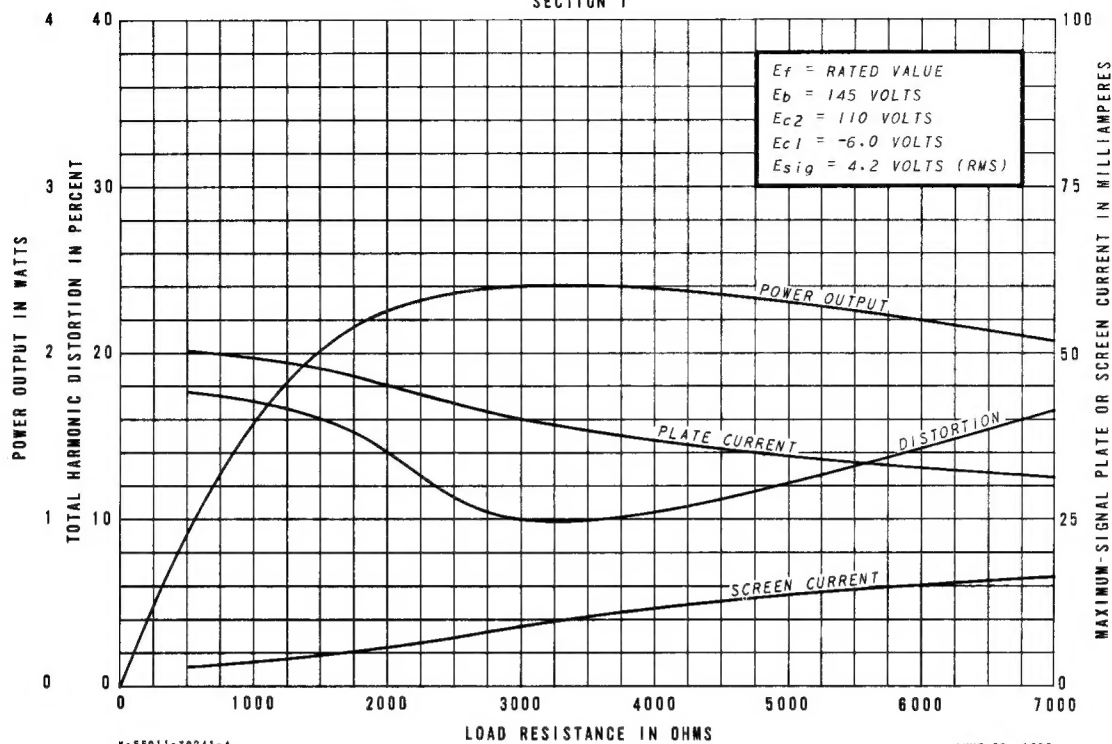
## AVERAGE TRANSFER CHARACTERISTICS

SECTION 1



# OPERATION CHARACTERISTICS

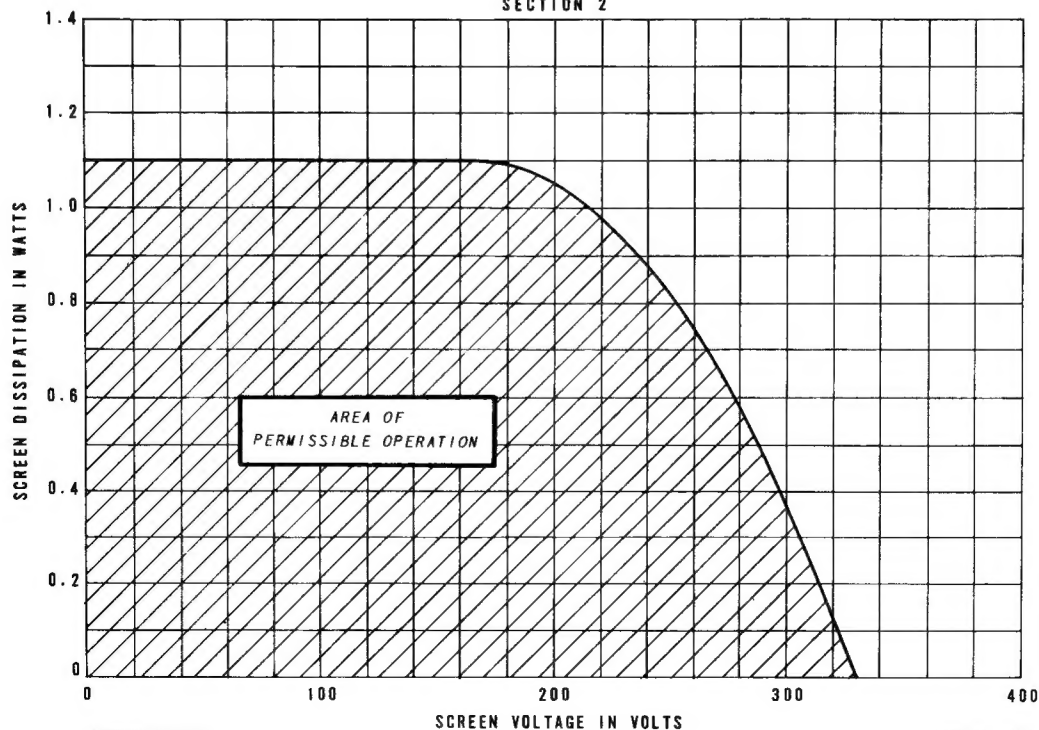
## SECTION 1



JUNE 26, 1967

# SCREEN RATING CHART

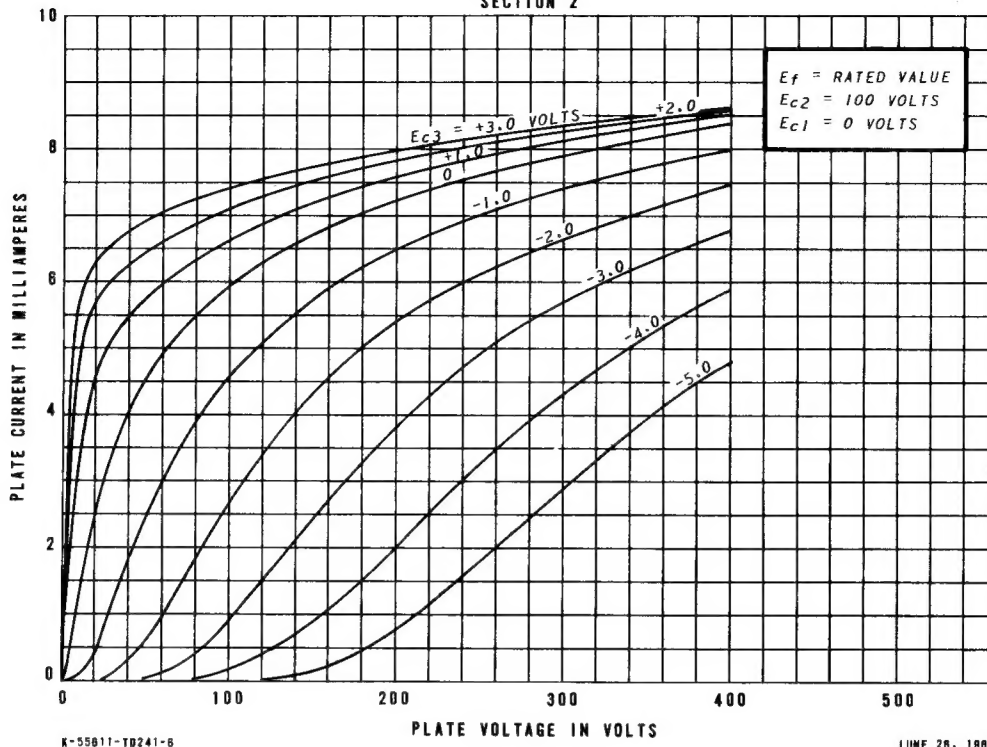
## SECTION 2



JUNE 26, 1967

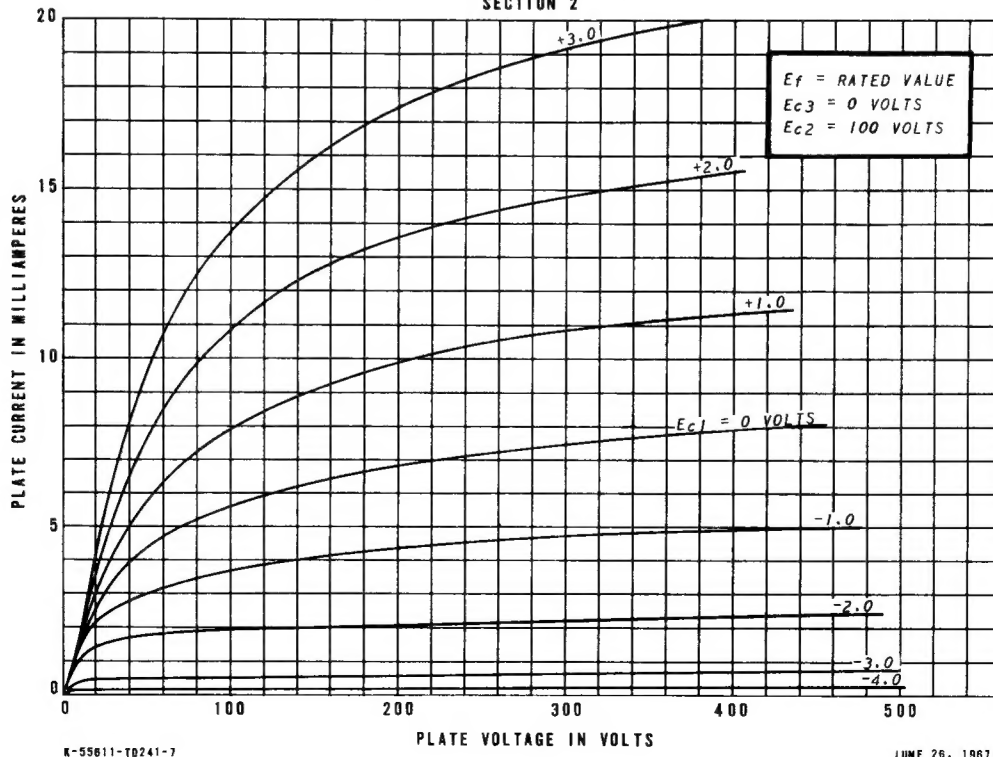
## AVERAGE PLATE CHARACTERISTICS

SECTION 2



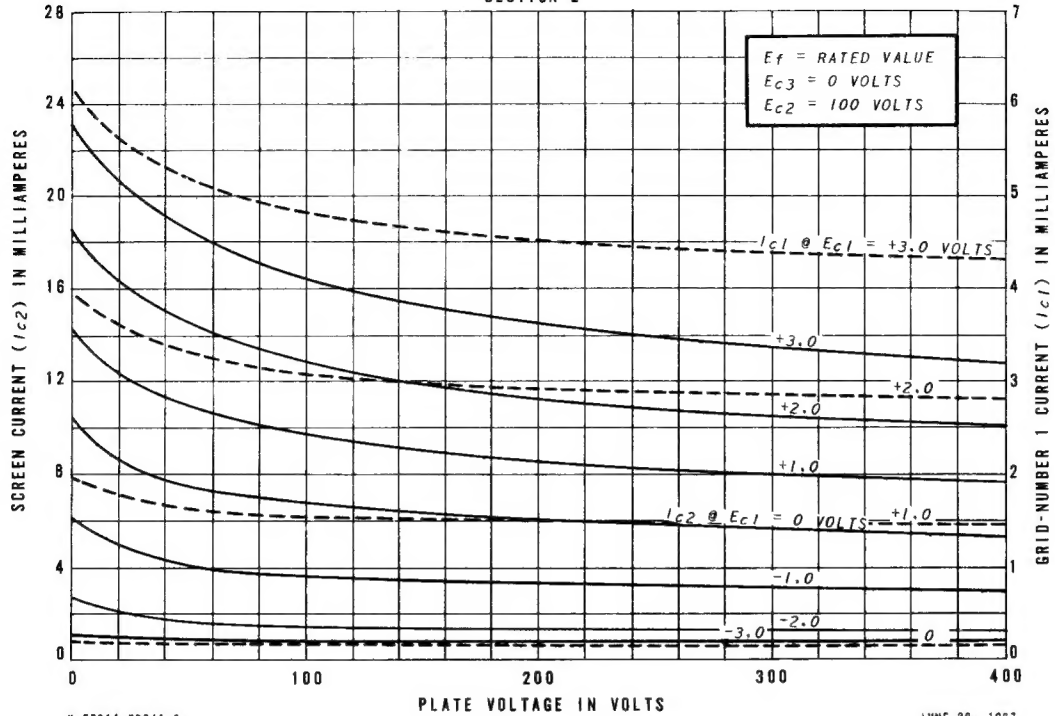
## AVERAGE PLATE CHARACTERISTICS

SECTION 2



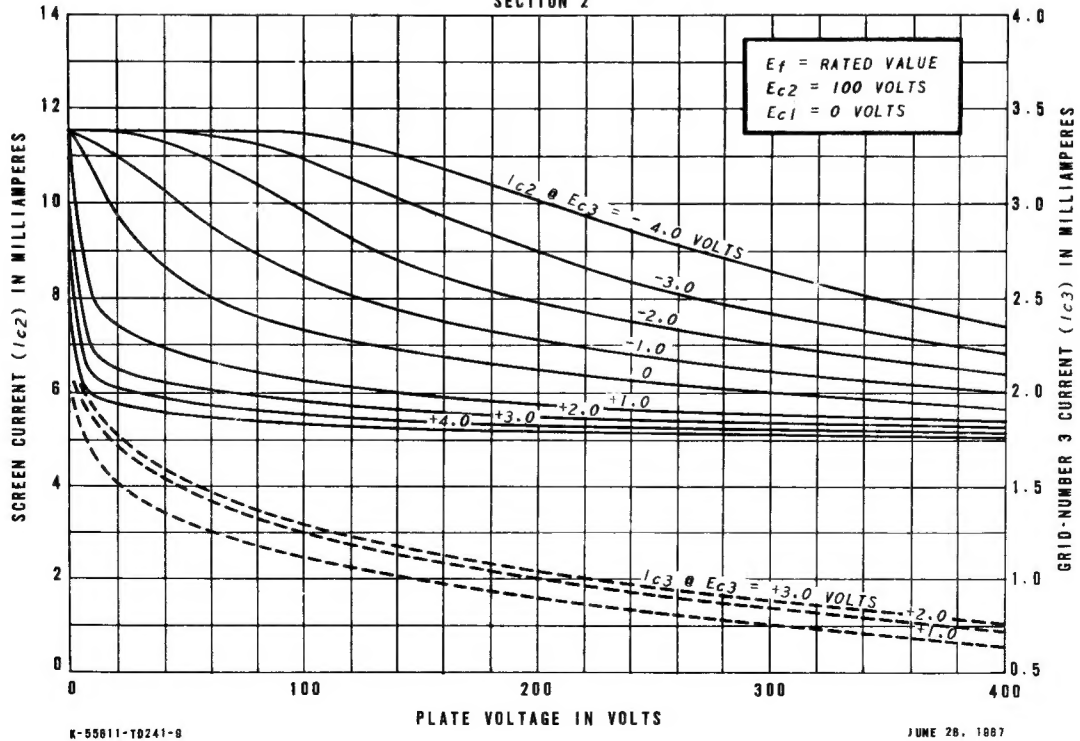
# AVERAGE CHARACTERISTICS

SECTION 2

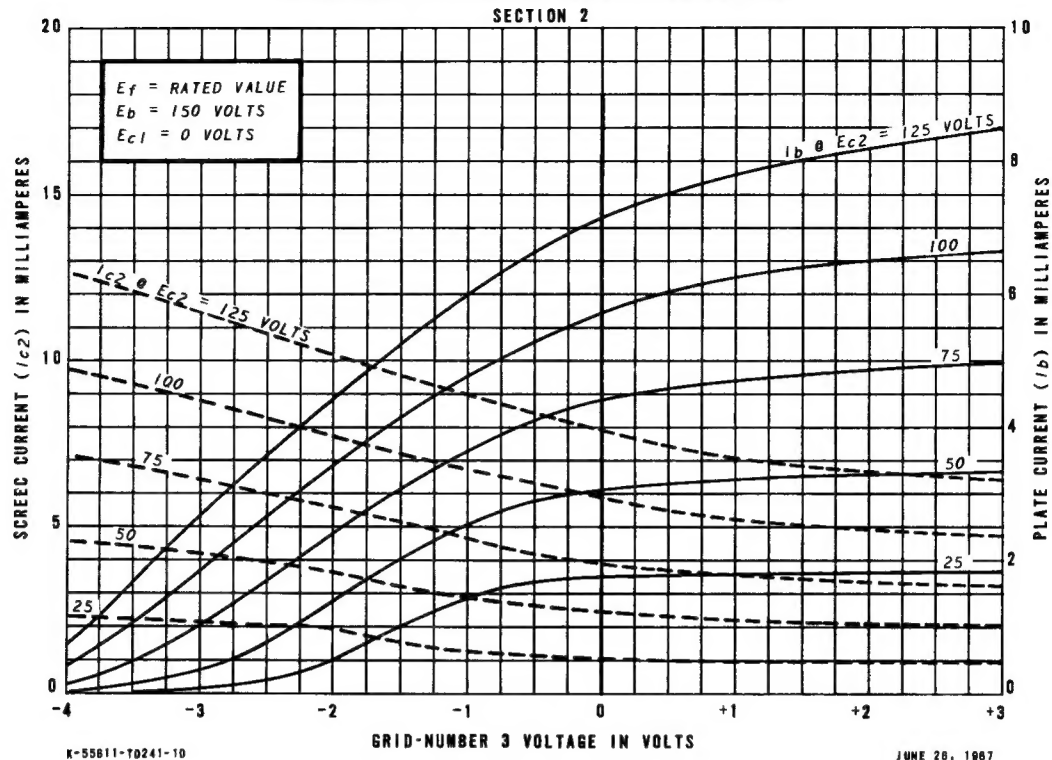


# AVERAGE CHARACTERISTICS

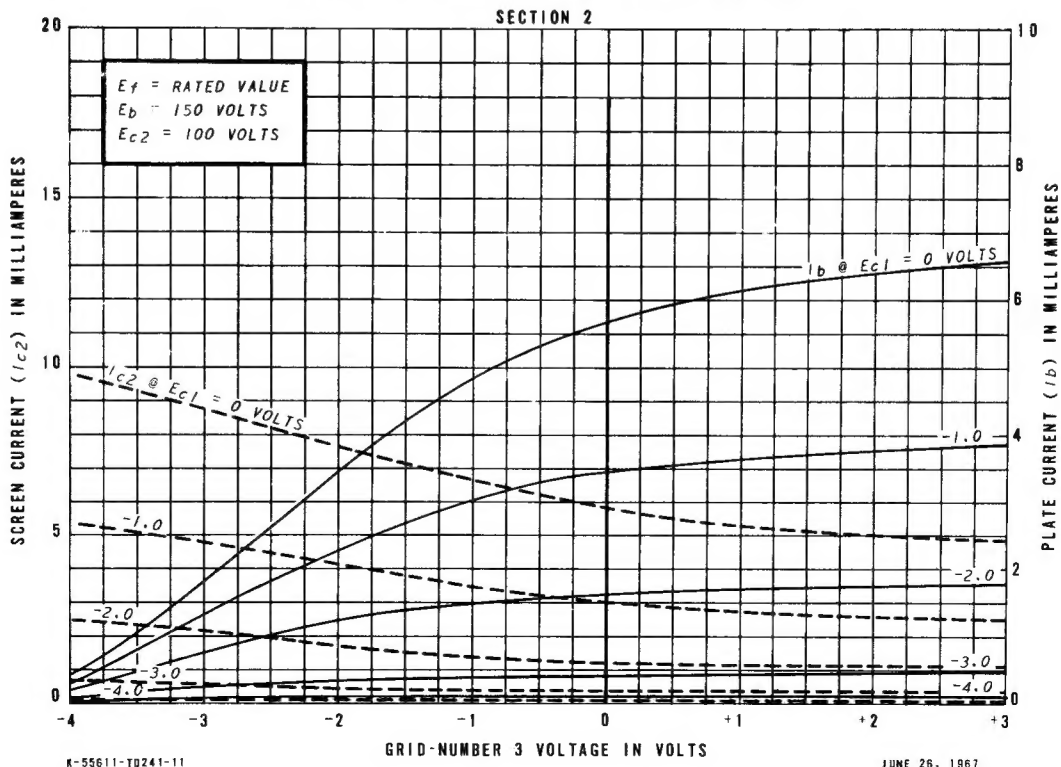
SECTION 2



# AVERAGE TRANSFER CHARACTERISTICS



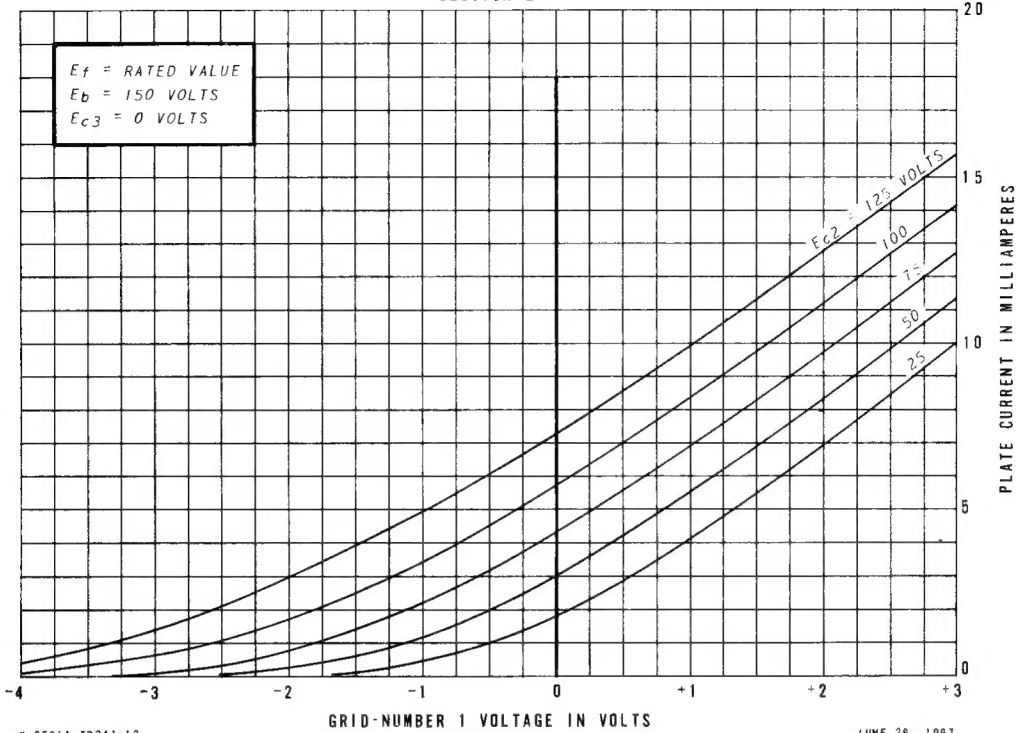
# AVERAGE TRANSFER CHARACTERISTICS





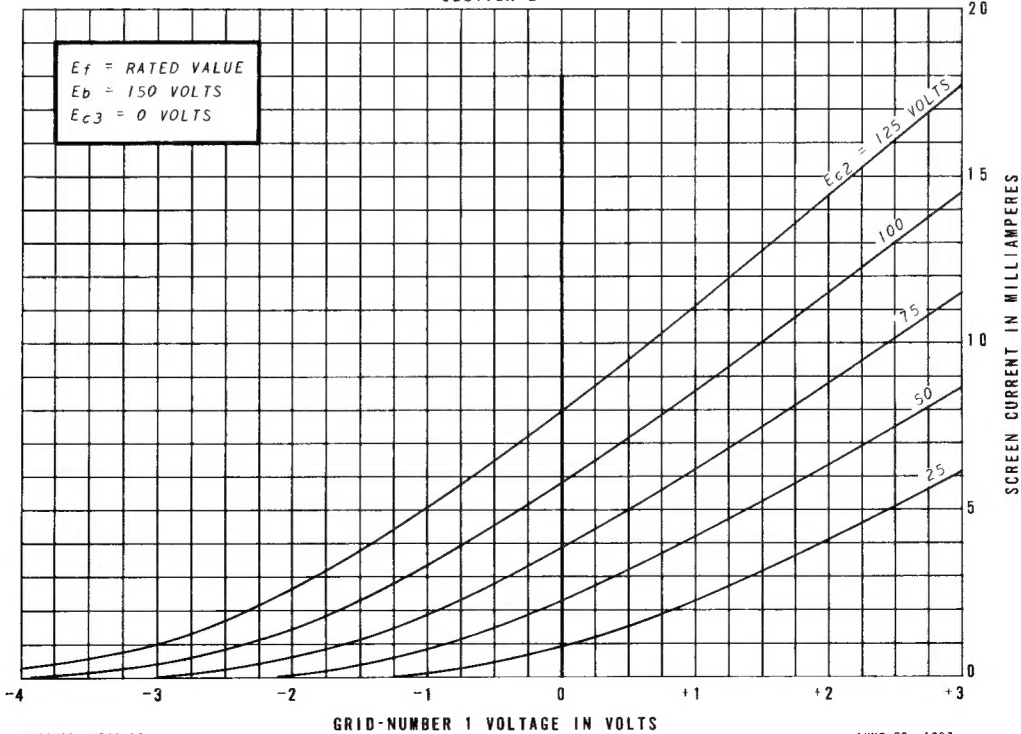
# AVERAGE TRANSFER CHARACTERISTICS

SECTION 2



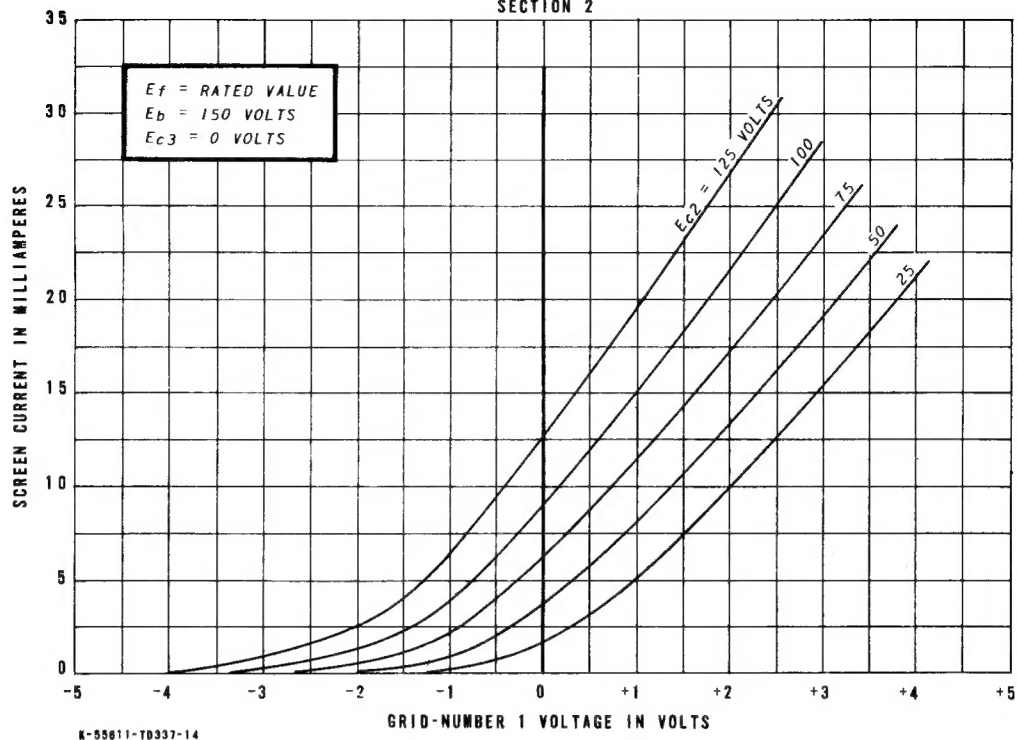
# AVERAGE TRANSFER CHARACTERISTICS

SECTION 2



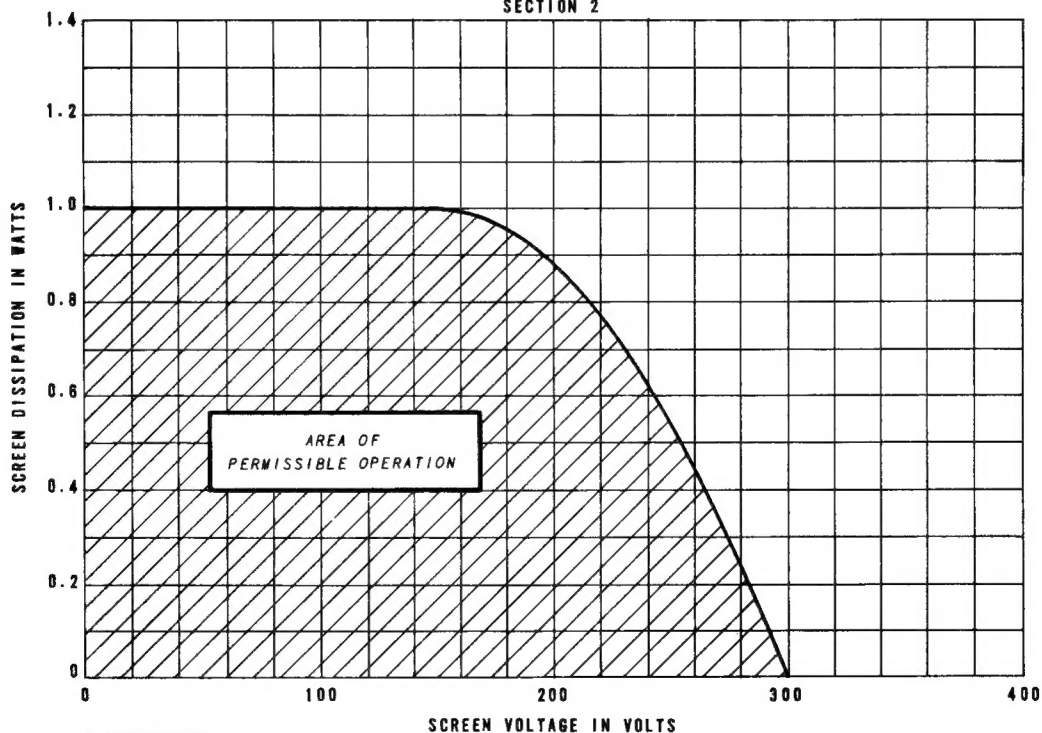
## AVERAGE TRANSFER CHARACTERISTICS

SECTION 2



## SCREEN RATING CHART

SECTION 2



TUBE PRODUCTS DEPARTMENT

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